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APR 06 2007

REMARKS

A. General:

The drawings were objected to because mixing of the combustion gas with oxygen in a ratio based on the measured temperature difference, or the means for doing so must be shown or the features cancelled from the claims. Applicant encloses herewith new figure 3 showing the mixing of oxygen and a combustion gas.

Claim 8 was objected to because, according to the Examiner, the dash following coriolis should be deleted. Applicants have obviated this objection by way of the foregoing amendments.

Claims 1-4, 6, 9, 11-13, 22, 24, 31, 33, and 38 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,393,562 to Breedlove (hereinafter referred to as "Breedlove"). For the reasons that follow, Applicants respectfully request reconsideration and allowance of claims 1-4, 6, 9, 11-13, 22, 24, 31, 33, and 38.

Claims 1, 3, 4, 8, 11, 12, 14, 15 and 17-22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,167,450 to Nukui et al. (hereinafter referred to as "Nukui") in view of Breedlove and U.S. Patent Application Publication No.

2002/0141945 to Foster et al. (hereinafter referred to as "Foster"). For the reasons that follow, Applicants respectfully request reconsideration and allowance of claims 1, 3, 4, 8, 11, 12, 14, 15 and 17-22.

B. Breedlove does not teach or suggest all the elements of claims 1-4, 6, 9, 11-13, 22, 24, 31, 33, and 38.

Turning now to claim 1, Breedlove neither teaches nor suggests "means (52) to determine a temperature difference in the flowing substance upstream and downstream of the heating or cooling element" or "evaluation means (70) for evaluating a characterizing feature of the flowing substance comprising relating temperature differences measured on one or more calibration substances to one or more characterizing features of the flowing substance."

Breedlove teaches a calorimeter 10 that may be adapted for use to control a furnace (Fig. 3), for use as a Btu per minute metering device with a gas supply line (Fig. 4), or for use as a Btu per cubic foot detector (Fig. 5). In each of the applications shown in Fig. 3, 4, and 5, the calorimeter 10 employs a set temperature differential in a gas burner chamber 11 to ensure that a constant supply of a sample gas, in terms of Btu per minute,

is being introduced into the gas burner chamber 11. Breedlove, Col. 2, ll. 48-54 and Col. 3, ll. 43-50. The temperature differential or temperature change in the gas burner chamber 11 is not that of a calibration substance, but, instead, is the relative temperature change between the sample gas mixed with air and the exhaust gasses produced in the gas burner chamber 11. Breedlove, Col. 2, ll. 48-54. When the temperature differential deviates from a set differential, the thermocouples 13, 14 detect this change and signal the controller 15, which regulates a valve 16 in the sample gas line 17 thereby altering the sample gas flow so that the set temperature differential is restored in the gas burner chamber 11. Breedlove, Col. 3, ll. 33-50.

With respect to the element "means (52) to determine a temperature difference in the flowing substance upstream and downstream of the heating or cooling element," Applicants respectfully point out that the device of Breedlove does not measure the temperature of the sample gas upstream and downstream of the heating or cooling element. In Breedlove the entire sample gas is consumed in the combustion process whereby there is no sample gas left downstream of the combustion point; instead there are only exhaust gases produced from combustion of the sample gas and air.

Accordingly, for at least this reason, Applicants respectfully request withdrawal of the 35 U.S.C. § 102(b) rejection of claim 1. Furthermore, since claims 2-4, 6, 9, 11-13, 31, 33, and 38 depend from claim 1, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 102(b) rejection of that these claims for at least this same reason.

With respect to the element "evaluation means (70) for evaluating a characterizing feature of the flowing substance comprising relating temperature differences measured on one or more calibration substances to one or more characterizing features of the flowing substance," Applicants respectfully point out that the device of Breedlove does not employ temperature differences measured on one or more calibration substances to one or more characterizing features of the flowing substance, but instead uses the temperature difference between the sample gas, itself, mixed with air and the exhaust gases produced by the combustion of the sample gas and air. Accordingly, for at least this reason, Applicants respectfully request withdrawal of the 35 U.S.C. § 102(b) rejection of claim 1. Furthermore, since claims 2-4, 6, 9, 11-13, 31, 33, and 38 depend from claim 1,

Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 102(b) rejection of that the these claims for at least this same reason.

Similarly, with respect to claim 2, Breedlove neither teaches nor suggests "the function comprises a data-base or a calibration equation." Breedlove merely teaches that "controller 15 responds to the change in temperature differential and adjusts valve 16 in sample gas line 17 in a direction and to an extent altering sample gas flow that the temperature differential is made to restore to its desired operation value. Breedlove, Col. 44-50. For at least this reason Applicants respectfully request reconsideration and withdrawal of the U.S.C. § 102(b) rejection of claim 2.

With respect to claim 4, Breedlove does not teach or suggest "wherein the flow measurement means (61) comprises a pressure measurement cell (90) for measuring a pressure difference over the temperature difference sensor (50)." According to the Examiner, the "differential pressure sensor 34" of Breedlove corresponds to "flow measurement means"; however, the pressure sensor 34 in Breedlove only measures pressure in an air flow regulator 19 of the calorimeter. In Breedlove, the pressure difference is not measured over the thermocouplers 13, 14, but in an air supply line 31. Thus, the device of Breedlove senses a pressure differential, however, the measurement of the pressure differential is not over a temperature difference sensor, but, instead over an air supply line 31. Accordingly, for at least this reason, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 102(b) rejection of claim 4.

Furthermore, Breedlove does not teach or suggest "flow correction means (62) comprises a pressure difference control means (91) for maintaining a substantially constant pressure difference over the temperature difference sensor." In Breedlove, the "pressure controller 38" and the "valve 32" do not maintain a substantially constant pressure difference over the temperature difference sensor. In the device of FIG. 1 in Breedlove, the pressure in the gas burner chamber 11, whereat the thermocouplers 13 and 14 are located, is a function of the pressure of the air supply and the gas. Since the pressure sensor 34, pressure controller 38, and valve 32 only regulated the supply of air into the gas burner chamber 11 in Breedlove they cannot by themselves maintain a substantially constant pressure difference over the temperature difference sensor. In fact, the entire purpose of the device in Breedlove is to vary the mass flow through the gas

burner chamber 11 so that a consistent amount of Btu per minute is introduced regardless of the type of gas employed. Accordingly, for at least this reason, Applicants respectfully request withdrawal of the 35 U.S.C. § 102(b) rejection of claim 4.

Similarly, Breedlove does not teach or suggest "the measured mass flow characteristic comprises a pressure difference over the heating-or cooling element and further comprising correcting the mass flow for a measured pressure difference variation to maintain a substantially constant pressure difference over the element" as recited in claim 22, "the flow measurement means (61) comprises a pressure measurement cell (90) for measuring a pressure difference over the temperature difference sensor (50) and the flow correction means (62) comprises a pressure difference control means (91) for maintaining a substantially constant pressure difference over the temperature difference sensor", as recited in claim 31, or the flow measurement means (61) comprises a mass flow sensor (110) measuring the mass flow through the temperature difference sensor (50) and the flow correction means (62) comprises a mass flow control means (91) for maintaining a substantially constant mass flow through the temperature difference sensor (50), as recited in claim 6. Accordingly, for at least this reason, Applicants respectfully request withdrawal of the 35 U.S.C. § 102(b) rejection of claims 6, 22, and 31.

Furthermore, with respect to rejected claims 22 and 24, Applicants respectfully point out that these claims depend from claim 21, which has not been rejected based on Breedlove. Accordingly, Applicants respectfully submit that claims 22 and 24 are allowable over Breedlove, for at least the same reason as claim 21. Accordingly for at least this reason, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 102(b) rejection of claims 22 and 24.

With respect to claims 9, 13, and 38, Breedlove does not teach or suggest "temperature correction means to correct for an absolute temperature variation in the flowing substance." In Breedlove, the temperature correction returns the differential temperature in the combustion chamber to a predetermined differential temperature, upon a deviation therefrom. In Breedlove, there is not any temperature correction means to correct for an absolute temperature variation in the sample gas deviates, since any deviation in the sample gas would not effect the temperature differential in the gas burner chamber 11, since the overall temperature deviation in the combustion chamber would

remain the same. For example, if the sample gas is at a lower temperature the temperature of the resulting combusted gases would be at a corresponding lower temperature, thus resulting in no net change in the temperature deviation. Accordingly, for at least this reason, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 102(b) rejection of claim 9, 13, and 38.

C. Nukui does not teach or suggest all the elements of claims 1, 3, 4, 8, 11, 12, 14, 15 and 17-22.

According to the Examiner, Nukui discloses all the elements of claims 1, 3, 4, 8, 11, 12, 14, 15 and 17-22, except for "the value would be based in part on the differential sensing of a calibration gas." According to the Examiner, however, "it is generally well known in the art of measuring and testing gasses to calibrate a device with a calibration gas of known properties in order to make more accurate measurements. Even assuming *arguendo* that Nukui teaches all the other elements of the rejected claims, while it may be known to calibrate a device using a calibration gas, what claims 1 and 21 actually recite are "evaluation means (70) for evaluating a characterising feature of the flowing substance comprising a function relating temperature differences measured on one or more calibration substances to one or more characterising features of the flowing substance" and "comparing the measured temperature difference with corresponding temperature differences measured on one or more calibration substances for evaluating a characterising feature of the flowing substance. Claims 1 and 21 do not recite "calibrate a device with a calibration gas of known properties in order to make more accurate measurements." Applicants respectfully submit that this is not germane to the foregoing recitations. Accordingly, for at least this reason, Applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection of claims 1, 3, 4, 8, 11, 12, 14, 15 and 17-22.

Furthermore, with respect to claim 4, Nukui does not teach or suggest "wherein the flow measurement means (61) comprises a pressure measurement cell (90) for measuring a pressure difference over the temperature difference sensor (50)." As shown in FIG. 4 of Nukui, the differential pressure gauge measures the pressure difference in the laminar flow-type flowmeter 5, whereas the temperature sensor is within the thermal type flowmeter (Col. 7, ll. 16-21.) Accordingly, for at least this reason, Applicants

respectfully request reconsideration and withdrawal of the 35 U.S.C. § 102(b) rejection of claim 4.

Similarly, Nukui does not teach or suggest "the measured mass flow characteristic comprises a pressure difference over the heating-or cooling element and further comprising correcting the mass flow for a measured pressure difference variation to maintain a substantially constant pressure difference over the element" as recited in claim 22. Accordingly, for at least this reason, Applicants respectfully request withdrawal of the 35 U.S.C. § 102(b) rejection of claim 22.

With respect to claim 8, Nukui neither teaches nor suggests, "wherein the mass flow sensor (110) comprises a coriolis, an ultrasonic or a sonic nozzle mass flow sensor". Accordingly, for at least this reason, Applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection of claim 8.

Furthermore, with respect to rejected claims 8, Applicants respectfully point out that claim 8 depends from claim 6, which has not been rejected based on Nukui. Accordingly, Applicants respectfully submit that claim 8 is allowable over Nukui, for at least the same reason as claim 6. Accordingly for at least this reason, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 103(a) rejection of claim 8.

With respect to claim 15, Nukui neither teaches nor suggests, "a switch (160) for switching on and off the flow control means, wherein, in an off-position, the device measures a flow rate of the flowing substance through the transport duct." Accordingly, for at least this reason, Applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection of claim 15.

With respect to claims 17, 18, 19, and 20, Nukui neither teaches nor suggests "identifying the flowing substance", "controlling the flow of the fuel substance to deliver a controlled heat of combustion", "determining a heat capacity of the flowing substance", or "identifying a source or supplier of the flowing substance." The device of Nukui only determines the calorific values of a substance. Col. 8, ll. 3-10. Accordingly, for at least this reason, Applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejections of claim 17, 18, 19, and 20.

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D. Conclusion

Applicants submit that the subject matter of the present application is novel, nonobvious, and useful. Accordingly, Applicants respectfully request that the rejections and objections be withdrawn and that the present application issue as early as possible.

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